



## SCIENCE AND TECHNOLOGY POLICY OFFICE

### Request for Information on the Energy and Climate Implications of Digital Assets

**AGENCY:** Office of Science and Technology Policy (OSTP).

**ACTION:** Notice of Request for Information on the Energy and Climate Implications of Digital Assets.

**SUMMARY:** The United States is committed to combatting the climate crisis and reaching net-zero greenhouse gas emissions no later than 2050. On March 9, 2022, President Biden signed an Executive Order on Ensuring Responsible Development of Digital Assets, which outlines a whole-of-government strategy to harness the benefits and mitigate the risks of digital assets, including the implications for energy use and the climate. The Executive Order tasked the White House Office of Science and Technology Policy (OSTP) to submit a report to the President that examines the potential for digital assets to impede or advance efforts to tackle climate change and the transition to a clean and reliable electricity grid. As OSTP conducts this examination, it invites comments from interested stakeholders, including the public. In particular, this RFI seeks comments on the protocols, hardware, resources, economics, and other factors that shape the energy use and climate impacts of all types of digital assets. It also seeks comment on attempts to mitigate climate harms and reduce energy use associated with digital assets, potential energy or climate benefits from digital assets and opportunities for natural asset or emissions accounting, likely future developments or industry trajectories related to digital assets, and implications that digital assets have for U.S. policy including as it relates to electricity grid reliability and greenhouse gas intensity.

**DATES:** Interested persons and organizations are invited to submit comments on or before 5:00 p.m. ET on May 9, 2022.

**ADDRESSES:** Interested individuals and organizations should submit comments electronically to DigitalAssetsRFI@ostp.eop.gov and include < RFI Response: Climate Implications of Digital Assets > in the subject line of the email. Due to time constraints, mailed paper submissions will not be accepted, and electronic submissions received after the deadline cannot be ensured to be incorporated or taken into consideration.

*Instructions:* Response to this RFI is voluntary. Each responding entity (individual or organization) is requested to submit only one response.

Responses may address one or as many topics as desired from the enumerated list provided in this RFI, noting the corresponding number of the topic(s) to which the response pertains.

Submissions must not exceed 10 pages (exclusive of cover page) in 11-point or larger font, with a page number provided on each page. Responses should include the name of the person(s) or organization(s) filing the comment, as well as the respondent type (e.g., academic institution, advocacy group, professional society, community-based organization, industry, member of the public, government, other). Respondent's role in the organization may also be provided (e.g., researcher, administrator, student, program manager, journalist) on a voluntary basis. Comments containing references, studies, research, and other empirical data that are not widely published should include copies or electronic links of the referenced materials; these materials, as well as a list of references, do not count toward the 10-page limit. No business proprietary information, copyrighted information, or personally identifiable information (aside from that requested above) should be submitted in response to this RFI. Comments submitted in response to this RFI may be posted on OSTP's website or otherwise released publicly.

In accordance with Federal Acquisitions Regulations Systems 15.202(3), responses to this notice are not offers and cannot be accepted by the Federal Government to form a binding contract.

Additionally, those submitting responses are solely responsible for all expenses associated with response preparation.

**FOR FURTHER INFORMATION CONTACT:** For additional information, please direct questions to Nik Marda at 202-456-4444 or [DigitalAssetsRFI@ostp.eop.gov](mailto:DigitalAssetsRFI@ostp.eop.gov).

**SUPPLEMENTARY INFORMATION:**

*Background:* Climate change is one of the most pressing problems confronting our nation and our world, which is why President Biden has committed to cutting U.S. greenhouse gas pollution by 50-52% by 2030, advancing environmental justice, and having a net-zero emissions economy by 2050. Building on the historic progress on climate action that President Biden achieved in his first year in office, the President’s plan to achieve those goals includes improving energy efficiency, deploying a record amount of new carbon-free energy sources, and advancing clean energy innovation.

The explosive growth of the digital asset ecosystem may contribute to greater energy use and negatively impact the climate. Many digital assets, including cryptocurrencies, use decentralized consensus mechanisms as opposed to a central authority to verify transactions. While different digital asset systems use different consensus mechanisms, many use “proof of work” based systems that require significant amounts of computing power and electricity, often derived from carbon-intensive sources. Some researchers estimate that cryptocurrencies use more electricity each year than many individual countries in the world, including some industrialized nations. Thus, digital assets may present a key environmental challenge at a time when we need to shift to carbon-free sources in order to combat climate change. On the other hand, digital assets might also have a positive impact on the climate. For example, they may provide new opportunities in carbon accounting and verification, increasing trust in carbon measurement and creating a novel opportunity for addressing climate change.

Recognizing these climate risks, other risks, and potential benefits of digital assets, President Biden signed Executive Order (EO) 14067: Ensuring Responsible Development of Digital Assets on March 9, 2022, to outline a whole-of-government strategy on digital assets. Pursuant to EO

14067, OSTP, and its partners from the Executive Office of the President and Federal agencies, are examining the connections between distributed ledger technology and energy transitions, the potential for these technologies to impede or advance efforts to tackle climate change at home and abroad, and the impacts these technologies have on the environment.

This RFI seeks public input to better understand the climate impacts of digital assets. In particular, this RFI seeks comments on the protocols, hardware, resources, economics, and other factors that shape the energy use and climate impacts of all types of digital assets. It also seeks comment on attempts to mitigate climate harms and reduce energy use associated with digital assets, potential energy or climate benefits from digital assets and opportunities for natural asset or emissions accounting, likely future developments or industry trajectories related to digital assets, and implications that digital assets have for U.S. policy including as it relates to electricity grid reliability and greenhouse gas intensity. These comments will inform a report to the President on the climate impacts of digital assets.

*Terminology:* The terms *blockchain*, *central bank digital currency*, *cryptocurrencies*, *digital assets*, and *stablecoins*, have the definitions provided in Section 9 of EO 14067.

*Scope:* OSTP invites input from interested stakeholders, including academic researchers and policy analysts; technical practitioners specializing in digital ledger technologies; civil society and advocacy groups; individuals and organizations who work on environmental issues; industry and industry association groups; Federal entities and employees; State, local, tribal, territorial, and foreign governments; and members of the public.

*Information Requested:* Respondents may provide information for one or as many topics below as they choose.

1. *Protocols:* Information on the climate impacts of the protocols used by digital assets. This includes the effect of cryptocurrencies' consensus mechanisms on energy usage, as well as potential mitigating measures and alternative mechanisms of consensus and the design tradeoffs

those may entail. For example, many digital assets – including those that make use of smart contracts – use or are looking into less energy-intensive consensus mechanisms than “proof of work.” Information is sought related to the benefits and drawbacks of those alternative mechanisms, as well as their different energy consumption profiles.

2. *Hardware*: Information about the climate impacts from the physical components that run the protocols for digital assets. This includes the embodied emissions of specialized hardware and cooling equipment used to mine certain cryptocurrencies, as well as the waste generated from this equipment needing to be replaced frequently due to rapidly improving mining equipment. This also includes potential mitigating measures and technology improvements to reduce the environmental impact from hardware usage.

3. *Resources*: Information about the resources used to sustain and power digital assets. This includes the electricity that powers mining rigs and the water used to cool those operations, as well as potential mitigating measures to reduce the amount of electricity and water used. This also includes quantitative estimates of the total amounts of these resources used by particular types of digital assets, or by the digital asset ecosystem at large. This also includes information concerning whether the costs of resources used are borne equitably across society or are disproportionately borne by historically disadvantaged communities.

4. *Economics*: Information about how the energy use of digital assets is affected by the value of, demand for, and supply of particular digital assets or their underlying infrastructure. This includes the environmental and infrastructural effects from cryptocurrency miners moving to areas with cheaper electricity, as well as the incentives that exist for cryptocurrency miners to use renewable energy sources for mining. This also includes information about impacts on the electric grid and about the need for potential incremental grid investments, along with the impacts on electricity bills for customers near or in affected service territories.

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5. *Past or ongoing mitigation attempts:* Information about past or ongoing attempts to mitigate negative climate impacts of digital assets. This includes voluntary industry efforts, and cryptocurrencies that are changing their consensus mechanism in order to reduce their energy usage. This also includes climate-focused and energy efficiency regulation or standards efforts by State, local, territorial, tribal, federal, or foreign governments.

6. *Potential energy or climate benefits:* Information about how digital assets can potentially yield positive energy or climate impacts. This includes potential uses of blockchain that could support monitoring or mitigating technologies to climate impacts, such as opportunities for natural asset or emissions accounting, as well as the exchanging of liabilities for greenhouse gas emissions, water, and other natural or environmental assets. This also includes specific approaches to increase the likelihood of direct climate or emissions benefits from digital assets, or associated grid services that indirectly lead to climate or emissions benefits. Furthermore, information is sought supporting or rebutting claims made by some proponents of cryptocurrencies that the energy used by mining cryptocurrencies is a net climate positive, either because it occurs during demand lulls or because it increases demand for renewable electricity sources.

7. *Likely future developments or industry trajectories:* Information about likely future developments or industry trajectories that would have implications for the future climate impacts of digital assets. This includes expected future developments in protocols, hardware, resources, and economics. Where possible, please describe the expected timescale for likely future developments.

8. *Implications for U.S. policy:* Information about how the climate impacts of digital assets might have implications for U.S. policy. This includes implications for energy policy, including as it relates to grid management and reliability, energy efficiency incentives and standards, sources of

energy supply, greenhouse gas intensity, and the transition to a net-zero emissions economy by 2050.

9. *Other information:* Any other information, not covered above, that is relevant for understanding the climate impacts of digital assets.

Dated: March 21, 2022.

**Stacy Murphy,**

*Operations Manager.*

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